How Do People Organize Their Photos in Each Event and How Does It Affect Storytelling, Searching and Interpretation Tasks?

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300+ Billion Photos

- We take a lot of photos
  - **Facebook**: 90 Billion (Jan 2011)
  - **Flickr**: 6 Billion (Aug 2011)
  - **Instagram**: 1 Billion (Apr 2012)

- With many devices
  - Camera phones: 2.5 Billion (Nov 2009)

Source: http://blog.1000memories.com/94
The Digital Shoebox

• How do we organize our photos?
  • Folders
  • Events
  • Faces
  • Locations

• What do we do with hundreds of photos in each event?
Organizing Within

- Group an event into smaller groups called “chapters”
- Complements existing methods
- **Automatic organization** (ICMEW 2012 paper: “Hidden Markov model for event photo stream segmentation”)
- First study on photo organization within an event
Outline

• Related work

• User study
  • Q1: How do people organize their photos in each event?
  • Q2: How does it affect storytelling, searching and interpretation tasks?
  • Q3: What layout aspects are important for chapter-based photo organization?
Related Work: User Studies

• How people manage their photo collections (Rodden ’99, Rodden & Wood ’03, Cunningham & Masoodian ’07)
  • Organizing photo collections into folders is very useful (according to events in chronological order)
  • Having many photos visible at once allows users familiar with the photos to scan them very quickly

• Photo sharing technologies (Frohlich et. al. ’02)

• Photowork: activities between capture and sharing (Kirk et. al. ’06)

• Personal and social photo collections (Sandhaus & Boll ’11)
Related Work: Photo Layouts

- Three important issues:
  - View hierarchy (Graham et. al. ’02)
  - Visualizing chronological order (Time Quilt: Huynh et. al. ’05)
  - Maximizing screen space usage (PhotoMesa: Bederson ’01)
User Study

• Q1: How do people organize their photos in each event?
• Q2: How does it affect storytelling, searching and interpretation tasks?
• Q3: What layout aspects are important for chapter-based photo organization?
User Study

• 23 college students, 8096 photos in 92 events

• Beginning of the session
  • Choose 4 favorite photos
  • "Group the photos into chapters according to [their] preference and liking"
  • Demo (to avoid learning effects)

• Tasks (within-subject design; avoid ordering effects)
  • T1: Storytelling from familiar event photos
  • T2: Finding a given photo from familiar event photos
  • T3: Interpreting unfamiliar event photos

• Questionnaires with a 5-point Likert scale, semi-structured interview
Plain Grid Layout
Grid-Stacking Layout

At the beach

Concert

5:45 PM
Space-Filling Layout
Q1: How do people organize their photos in each event?

- Users value **chapter consistency** more than the chronological order of the photos

- Criteria for chapters include
  - **Moment** ("according to time")
  - **Object** (e.g. railroad tracks, characters at cosplay event)
  - **Location** (e.g. tourist spots)
  - **Photography type** (e.g. scenic photos vs portrait photos)
  - **Intention** (e.g. silly shots, archival)
Q1: How do people organize their photos in each event?

• Choice of **criteria** and **granularity** for chapter grouping are very subjective

• For example
  
  • Speakers at a conference as one ToC chapter
  
  • Photos of a location at different times in one chapter, but scenic photos separated from portrait photos
  
  • Fine-grain chapters by visual similarity, unless “[its] for a big event because there will be too many chapters”
  
  • Aversion towards chapters with only one or two photos
Q2: How does it affect storytelling, searching and interpretation tasks?
Q2: How does it affect storytelling, searching and interpretation tasks?

- Two-tailed paired student’s t-test
- Chapter grouping helps present the event’s story, find photos, and interpret unfamiliar photos.
- The baseline plain grid layout was preferred the least for all three tasks.
  - “scrolling, scrolling, scrolling ... [did] not know where to stop and say something more”
  - “I can’t tell if the photos are apart or together”

<table>
<thead>
<tr>
<th>Questionnaire Statement</th>
<th>Bi-Level</th>
<th>Grid-Stacking</th>
<th>Space-Filling</th>
<th>Plain Grid</th>
</tr>
</thead>
<tbody>
<tr>
<td>The layout helps present the event’s story for sets with many photos</td>
<td>4.20.005</td>
<td>4.20.005</td>
<td>3.70.005</td>
<td>2.4</td>
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<tr>
<td>The layout helps present the event’s story for sets with few photos</td>
<td>4.10.005</td>
<td>4.30.005</td>
<td>4.10.005</td>
<td>3.2</td>
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<tr>
<td>The layout helps them remember the event’s story for sets with many photos</td>
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<td>4.30.001</td>
<td>3.90.001</td>
<td>2.6</td>
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<tr>
<td>The layout helps to find a photo in a set with many photos</td>
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<td>The layout helps to find a photo in a set with few photos</td>
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<td>3.1</td>
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<tr>
<td>The layout helps to interpret photos of an event with many photos</td>
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<td>4.60.005</td>
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<td>2.9</td>
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<td>The layout helps to interpret photos of an event with few photos</td>
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Q3: What layout aspects are important for chapter-based photo organization?

- **Chronological order of chapters** more valued than maximizing screen space usage
- **Chapter consistency** more valued than chronological order of the photos
- Overview of event photos afforded by **chapter thumbnails**
Conclusion

• First study to explore chapter-based photo organization
  • More to do: longitudinal study; more subjects

• Primary findings
  • Users value chapter consistency more than chronological order of the photos
  • Choice of chapter criteria and granularity for chapter groupings are very subjective
  • Users value chronological order of the chapters more than maximizing screen space usage in photo layouts
Thank you!